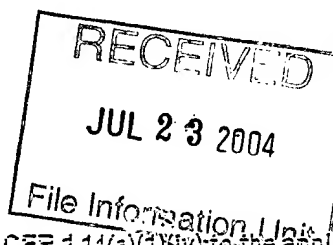


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US005670633A

United States Patent [19]

Cook et al.

[11] Patent Number: **5,670,633**[45] Date of Patent: **Sep. 23, 1997****[54] SUGAR MODIFIED OLIGONUCLEOTIDES THAT DETECT AND MODULATE GENE EXPRESSION****[75] Inventors:** Phillip Dan Cook, Carlsbad; Andrew Mamoro Kawasaki, Oceanside, both of Calif.**[73] Assignee:** ISIS Pharmaceuticals, Inc., Carlsbad, Calif.**[21] - Appl. No.:** 835,932**[22] PCT Filed:** Aug. 12, 1991**[86] PCT No.:** PCT/US91/05720

§ 371 Date: Mar. 5, 1992

§ 102(e) Date: Mar. 5, 1992

[87] PCT Pub. No.: WO92/03568

PCT Pub. Date: Mar. 5, 1992

Related U.S. Application Data**[63]** Continuation-in-part of Ser. No. 566,977, Aug. 13, 1990, abandoned, and Ser. No. 463,358, Jan. 11, 1990, abandoned.**[51] Int. Cl.⁶** C07H 21/00; C07H 21/02; C07H 21/03; A01N 43/04**[52] U.S. Cl.** 536/23.1; 536/23.5; 536/23.6; 536/23.7; 536/24.1; 536/24.5; 536/25.3; 536/25.31; 514/14**[58] Field of Search** 536/23.1, 23.5, 536/23.6, 23.7, 24.1, 24.5, 25.3, 25.31; 514/44**[56] References Cited****U.S. PATENT DOCUMENTS**

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Primary Examiner—Brian Stanton**Attorney, Agent, or Firm**—Woodcock Washburn Kurtz Mackiewicz & Norris**[57]****ABSTRACT**

Compositions and methods are provided for the treatment and diagnosis of diseases amenable to modulation of the production of selected proteins. In accordance with preferred embodiments, oligonucleotides and oligonucleotide analogs are provided which are specifically hybridizable with a selected sequence of RNA or DNA wherein at least two of the 2'-deoxyfuranosyl moieties of the nucleoside unit is modified. Treatment of HIV, herpes virus, papillomavirus and other infections is provided.

3 Claims, No Drawings